EC605 – Computer Engineering Fundamentals
Fall 2016
M W 10am-noon in PHO 307

Staff Information
Instructor:
   Tali Moreshet, PHO 528   Email: talim@bu.edu (with EC605 in the subject line)
   Office hours: T 2-4pm, Th 3-4pm, and by appointment

Teaching assistants:
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   Lab hours: M-Th 6-8pm, PHO305

Course Description
This is an introductory course to computer engineering, focusing on the hardware/software interface, and presenting a bottom-up view of a computer system. Topics include logic design: binary arithmetic, combinational and sequential logic. Computer organization: assembly language programming, CPU design, and memory systems. Introduction to compilers, operating systems, and computer networks.

Prerequisites
This course is intended for graduate students with little or no background in computer engineering. It is expected that students have some programming background, and EC602 is a co-requisite.

Textbooks
- **Computer Organization and Design, The Hardware/Software Interface**, ARM Edition, David Patterson and John Hennessy, Morgan Kaufmann, 2016. (Required)
- **Digital Design**, fifth edition, Morris Mano and Michael Ciletti, Pearson. (Optional)
- **Starter's Guide to Verilog 2001**, Michael Ciletti, Pearson. (Optional)
- **Computer Systems, A Programmer's Perspective**, third edition, Randal Bryant and David O'Hallaron, Pearson, 2016. (Optional)
- **Computer Networks**, (5th or 6th edition), Andrew Tanenbaum and David Wetherall, Prentice Hall. (Optional)
- Other readings TBD.

Assignments, announcements, course material, readings, updated schedule, and other useful links will be posted on Blackboard (http://learn.bu.edu).

Outcomes
1. Understand the fundamentals of binary arithmetic.
2. Understand what components are available for logic design.
3. Design combinational digital logic systems given specifications.
4. Design sequential digital logic systems given specifications.

5. Understand the basics of assembly language programming.
6. Understand concepts of CPU and memory design.
7. Gain knowledge of some basic concepts of compilers.
8. Gain basic understanding of operating systems, including Unix and file systems.
9. Understand basic concepts of computer networks, with an emphasis on TCP/IP.

Evaluation

Grading:	Exams: 50%
	Labs: 30%
	Homework: 10%
	Class attendance/ Quizzes: 10%

Exams: There will be one midterm exam, during class time (tentative Oct. 12), and a cumulative final exam. Exams are closed book and notes, but you are allowed to bring one sheet of notes. No calculators are allowed.

Labs: Lab assignments will be posted on the Blackboard website. The labs need to be submitted on Blackboard and demoed to a TA. Labs are to be completed in groups of two, fixed for the semester.

Homework: Homework assignments will be posted on the Blackboard website. Homeworks are to be submitted, on Blackboard in pdf format, before the specified deadline.

Quizzes: The purpose of the in-class quizzes is to make sure that you attend class and keep up with the material. No makeup is available for quizzes, even with a legitimate excuse. However, to account for this, the lowest quiz grade will be dropped.

Course Policy

- **Attendance:** You must come to class. Much of the material (and perspective) in this course will be found nowhere else. Part of your grade is dependent on class participation.
- **Homework**: The homework must be the result of your individual work. You may discuss the contents and general approach to a problem with your classmates but not the detailed solution. You are expected to formulate your approach and write the solutions of HW/ paper reviews by yourself. Clearly reference any sources you used in your work: books, Internet, and your collaborators! Copying the solution and/or answer from another student or source is considered cheating. Little to no credit will be given for late homework.
- **Labs:** The labs must be the result of both lab group members. You may discuss the contents and general approach to a problem with your classmates but not the detailed solution. You are allowed 2 days total late submission of the lab with no penalty. The demos should be done according to the specified schedule with no delay.
- **Missing exam:** If you have a legitimate reason for missing an exam, or submitting a late assignment, please notify me at least a week in advance in order to schedule a make up time.
- **Exam/Homework/Lab Grade discussion**: Grade discussion/corrections should be done within one week after the graded exam or homework is distributed. No grade changes will be made after one week.